



NH Energy Codes and Energy Efficiency Programs

NH The Little State That Could (and does)

Collaboration – Cooperation - Community

- NH Public Utilities Commission
- NH Electric and Gas Utilities
- Community Groups
- Residential Energy Performance Assoc.
- US Department of Energy
- Building Codes Assistance Project
- NH Sustainable Energy Association
- NH Technical Colleges



NH Energy Codes General Info

- In 1979 The legislature passed NH's first Energy Code.
- In 2003 the legislature adopted the IECC 2000. That same legislation created a Building Codes Review Board to guide the codes process in NH.
- That board is currently considering the adoption of the IECC 2006
- The NH Public Utilities Commission administers the NH Energy Codes.



PUC Energy Codes Office

- We work with all towns that do not have a full time building inspector.
- In the past 7 years the PUC has gone from processing about 900 applications to around 2000 per year.
- We are responsible for Education and Training relating to energy codes and the beyond codes programs.

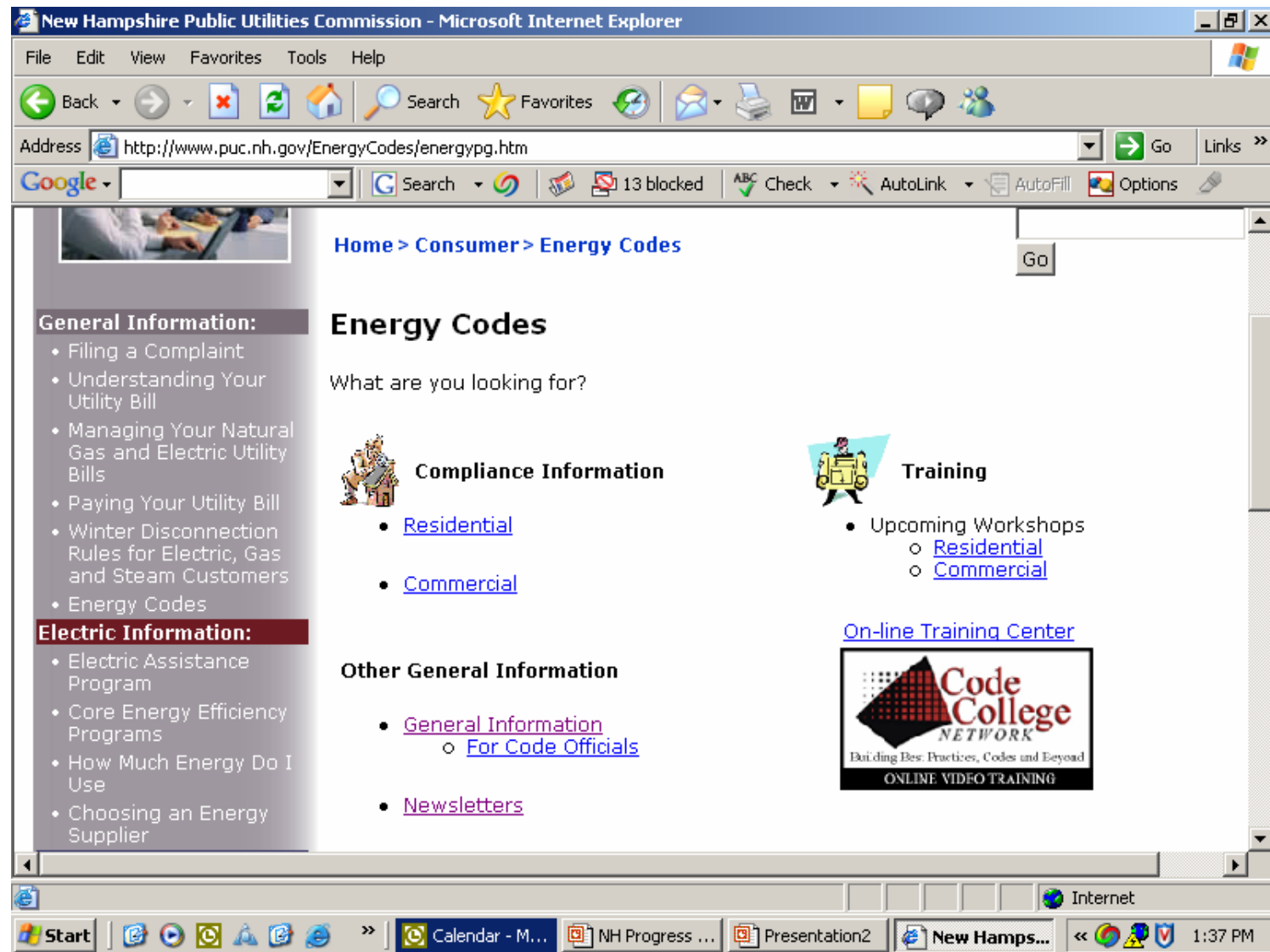


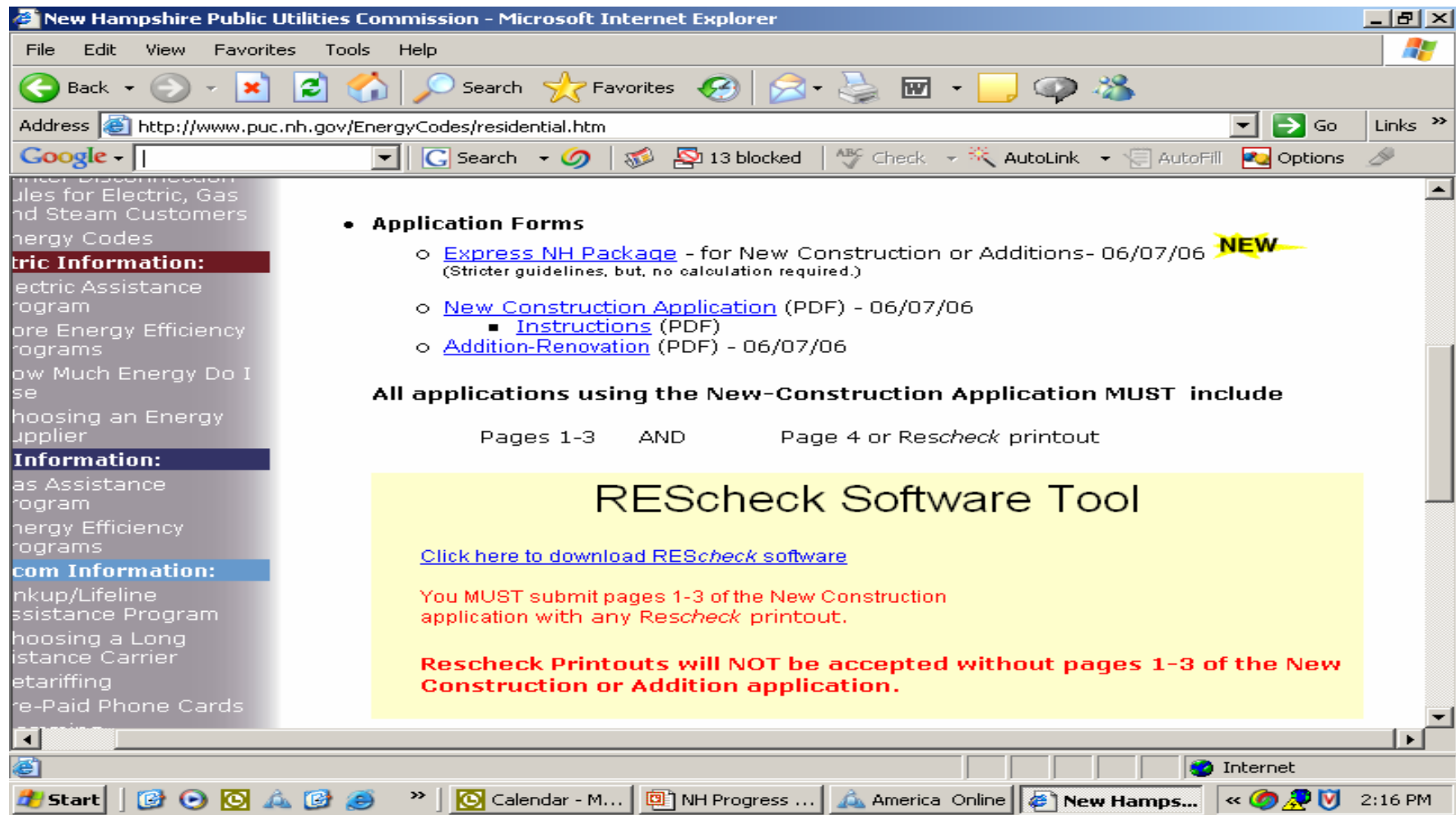
Use of web for information and applications for compliance and data tracking

- Information available to answer most e-code questions online 24/7.
- Applications available online.
- ResCheck NH available online.
- Online Application Module available.
- Online Training videos.
- PUC custom data base provides better tracking capabilities for the PUC and quicker turn around time for builder.

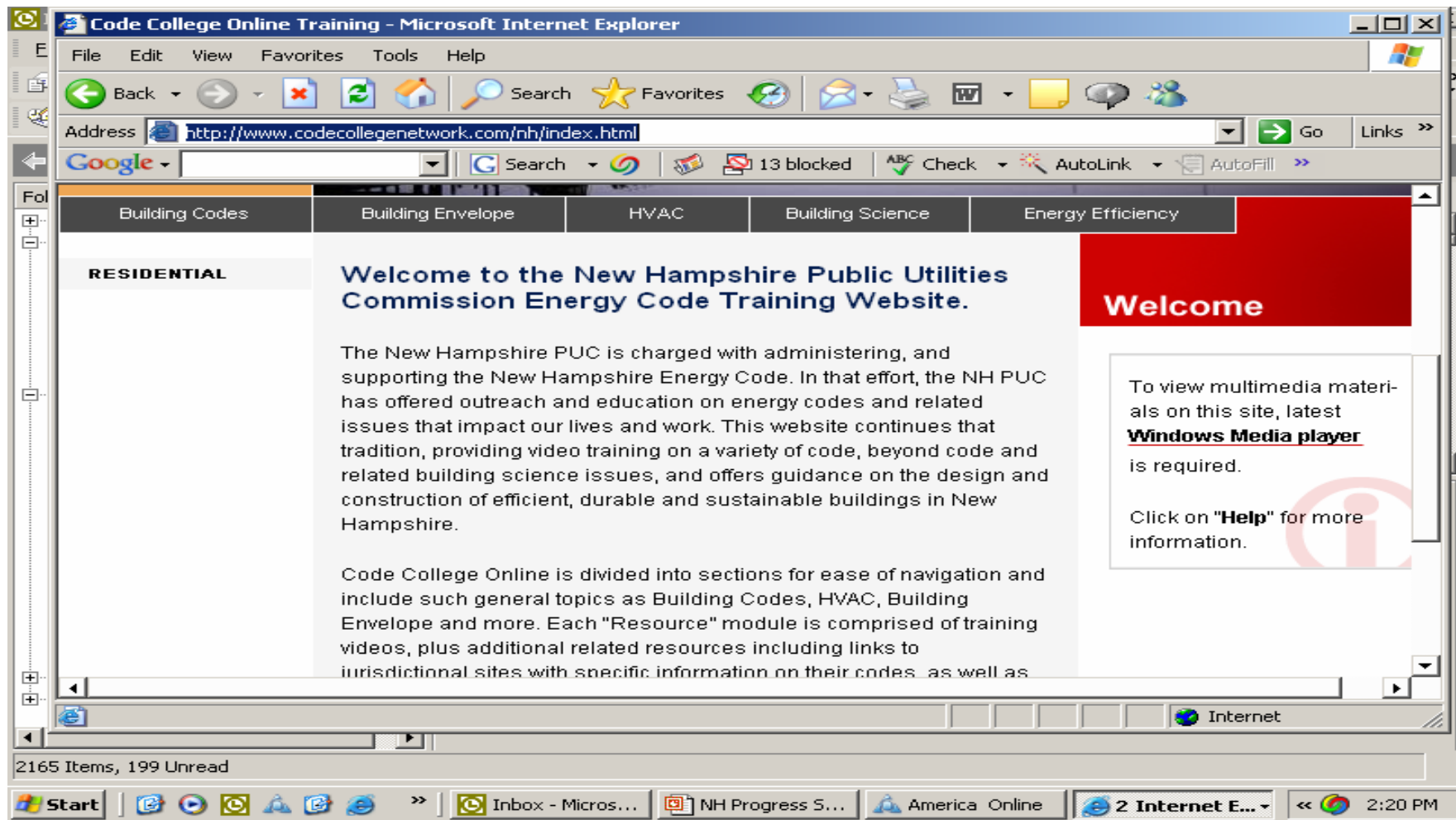


User view of PUC Website

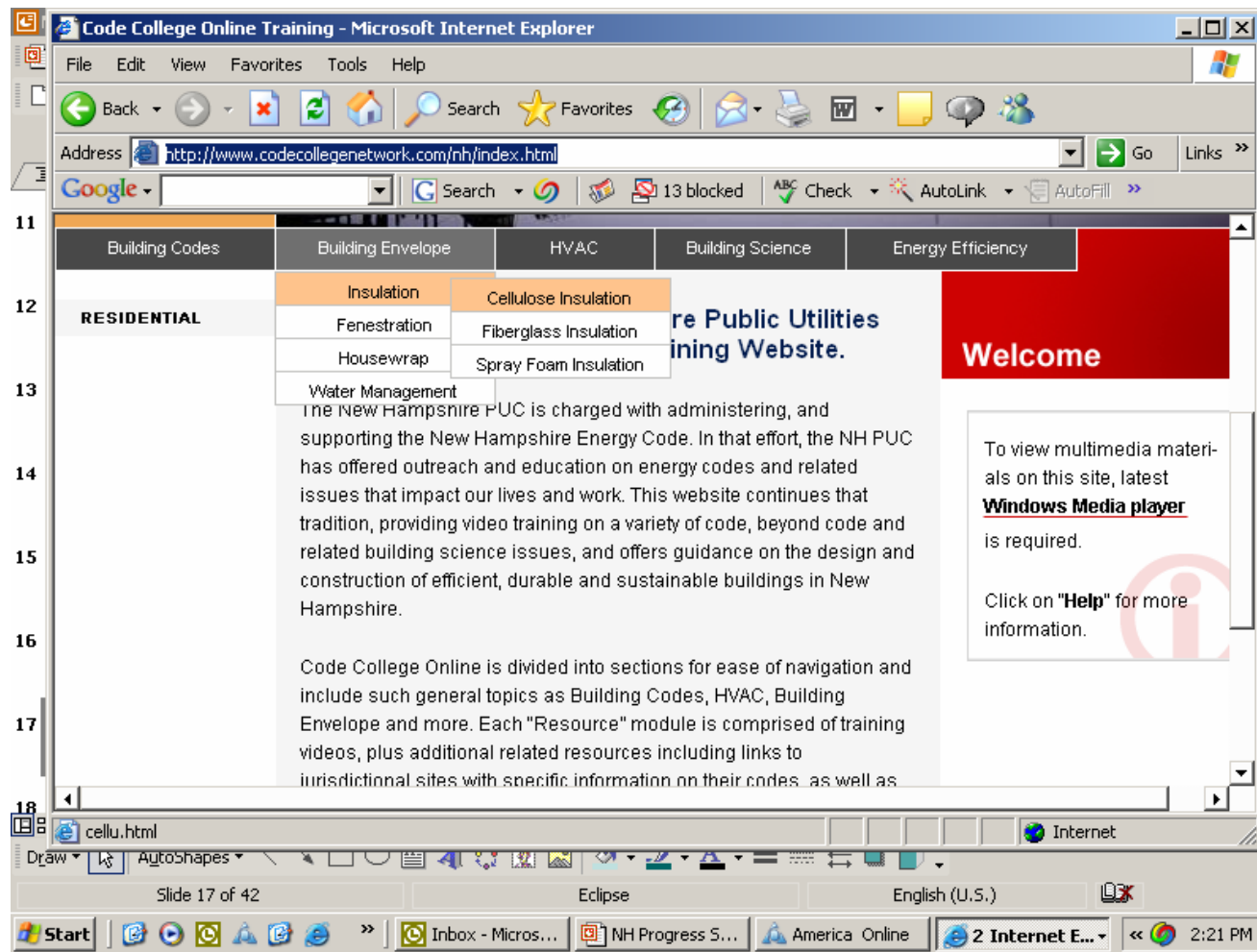




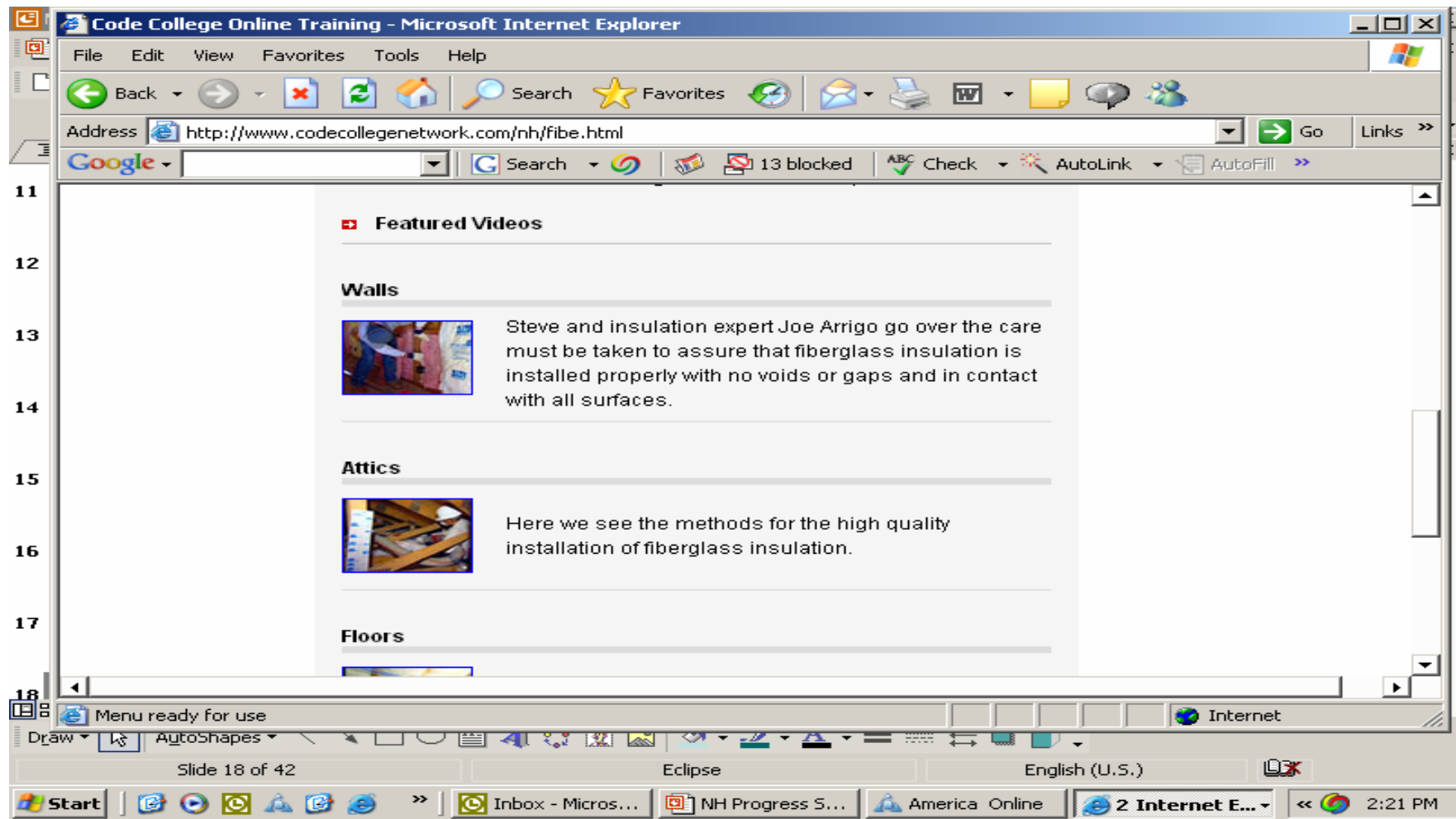
User View PUC Website Online Training



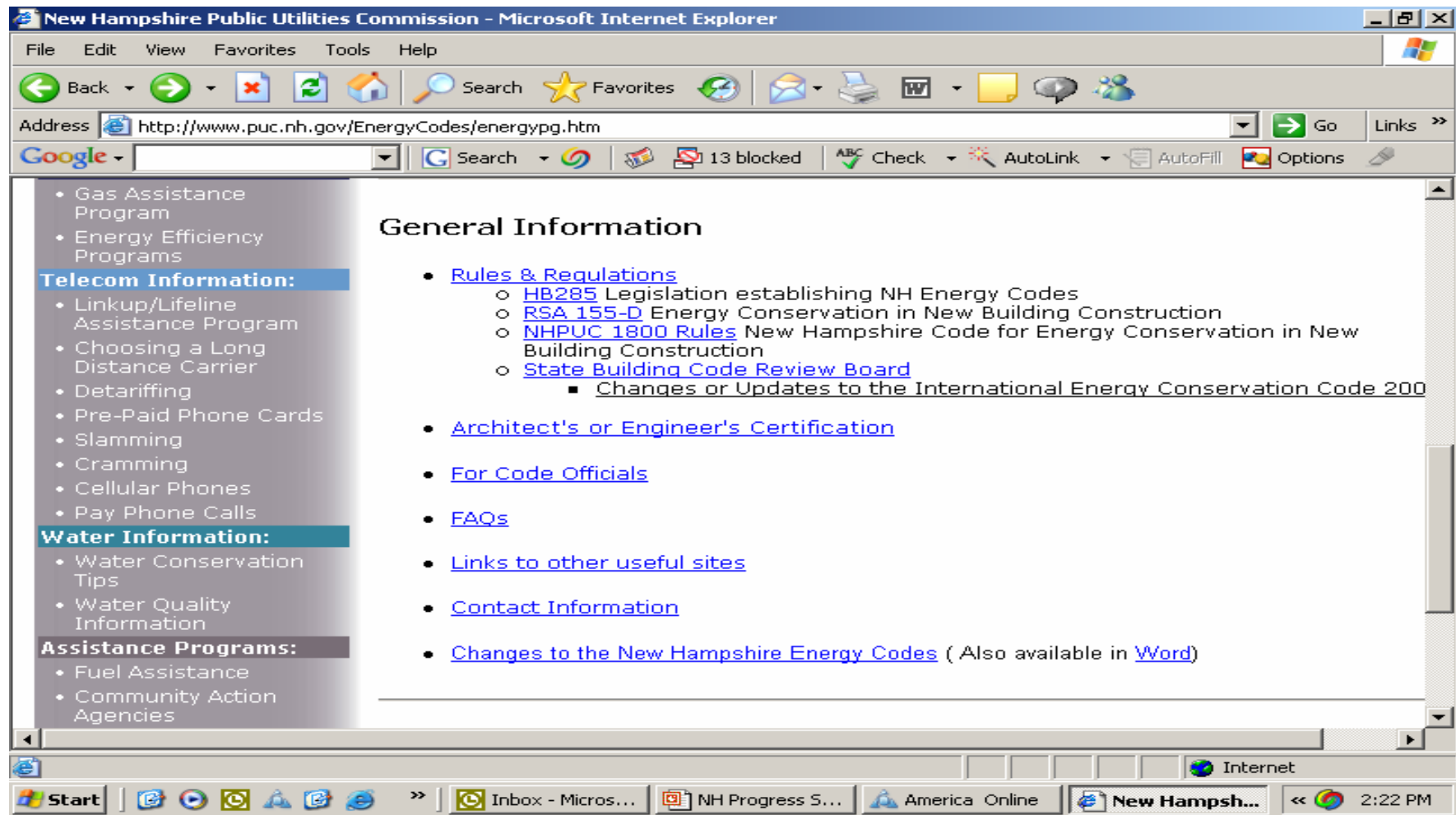
User View PUC Website Online Training Video Selection



User View PUC Website Online video training



User View PUC Website General Information



User View Online Compliance Owner Info data entry

Energy Code Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Reload Print Mail Wordpad New Tab Links

Address http://www.puc.nh.gov/energycode/Page1.aspx Go Links

Google Search 13 blocked ABC Check AutoLink AutoFill Options

Consumer Regulatory Safety Electric Gas/Steam Telecom Water/Sev

Home > Consumer

Energy Code Application - Page One

Owner Information

Company Name: Live Freeze or Die Construction

* First Name: Porgie

* Last Name: Tirebiter

* Street Address: 4th and Drucker

* City, State & Zip: McArthur Park NH 00000

* Telephone: (603) 456-7890 Example: 603-271-2431

* E-mail Address: PTirebiter@TheBigLA.org

(* = Required Field)

NH.Gov | Home | Consumer | Regulatory | Safety | Electric | Gas & Steam | Telecom | Water & Sewer | Contact Us | Site Map | Search |

Start | Internet | Energy Code ... 2:27 PM

User View Online Compliance Contractor Info data entry

Energy Code Application - Microsoft Internet Explorer




File Edit View Favorites Tools Help

Address <http://www.puc.nh.gov/energycode/Page2.aspx> Go Links >>

Google Search 13 blocked Check AutoLink AutoFill Options

Home > Consumer

Energy Code Application - Page Two

Contractor Information (Not Required)   

Company Name:

First Name:

Last Name:

Street Address:

City, State & Zip:

Telephone: Example: 603-271-2431

E-mail Address:

Note - If you begin to complete this form, all fields except the Email Address are required.

NH.Gov | Home | Consumer | Regulatory | Safety | Electric | Gas & Steam | Telecom | Water & Sewer | Contact Us | Site Map | Search |

Start | Internet | Inbox - Micros... | NH Progress S... | America Online | Energy Code ... | 2:29 PM

User View Online Compliance Efficiency data entry page

Energy Code Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites RSS Feeds Mail Downloads Print Favorites

Address <http://www.puc.nh.gov/energycode/Page4.aspx> Go Links

Google Search 13 blocked Check AutoLink AutoFill Options

Energy Code Application - Page Four

Energy Efficiency Information

* Total Floor Space: 2200

Heating System Manufacturer & Model: BurnEm

* Primary Fuel: Oil * AFUE: 86

* Heating System Type:

☒ Hot Water ☐ Stove ☐ Heat Pump
☐ Hot Air ☐ Resistance ☐ Other

Secondary Fuel (if any): None

* Highest Window U-Value: .35 Argon Low-E

* Windows Glazing Area: 140 * Gross Wall Area: 1976

Glazing Percentage: 0

* Building Type: WOOD FRAME

Notes:

(* = Required Field)

Done Internet

Start Inbox - Micros... NH Progress S... America Online Energy Code ... 2:31 PM

User View Online Compliance Attachment Page

Energy Code Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites RSS Feeds Mail Downloads Print AutoFill Options

Address http://www.puc.nh.gov/energycode/Page5.aspx Go Links

Google Search 13 blocked Check AutoLink AutoFill Options

Energy Code Application - Page Five

If submitting Online, Please Attach Files

* Building Plans: C:\Documents and Settings\wgomolomb\My Docu Browse...

* Attach REScheck file here: C:\Program Files\Check\REScheck\Z15456.rck Browse...

* Area Calc as OwnerLastName.acx: C:\Program Files\Check\REScheck\areaCalc.e Browse...

Browse...

Browse...

Browse...

Browse...

Submit On-line

(* = These are required fields if you are submitting an on-line application.)

NH.Gov | Home | Consumer | Regulatory | Safety | Electric | Gas & Steam | Telecom | Water & Sewer | Contact Us | Site Map | Search |

Start Internet

Inbox - Micros... NH Progress S... America Online Energy Code ... 2:33 PM

NHPUC Energy Codes Data Base/Tracking Software



Data Base Entry Screen

Owner Information

View Current Energy Code Applications (Read Only Mode)

Company Name:

First Name:

Last Name:

Street Address:

City: State: Zip:

Telephone: Email:

Application Received?: ☐ Date Received:

Referred To:

In Process?: ☐

Owner Contractor Building Approval Notes Browse File Attachments

Sort = [Date Entered] DESC 1 of 7883

Add First Prev Next Last Edit Save Delete Cancel Refresh Find Filter Sort Approve Spell Print Email Export Exit

Start | Calendar - M... | 2 Microsoft... | New Hampsh... | 2 | 1:41 PM

Data Base Entry Screen

Building Information

View Current Energy Code Applications (Read Only Mode)

Tax Map: 115-02

Lot: 83

Street Address: Beaver Brook

City: Stoddard

Building Code: 9216

City Email Address:

Copy Street & Town

Owner Contractor Building Approval Notes Browse File Attachments

Sort = [Date Entered] DESC 1 of 7883

Add First Prev Next Last Edit Save Delete Cancel Refresh Find Filter Sort Approve Spell Print Email Export Exit

Start | Calendar - M... | 2 Microsoft... | New Hampsh... | 2 | 1:41 PM

Data Base Entry Screen

Efficiency/Approval Information

View Current Energy Code Applications (Read Only Mode)

Total Floor Space: 1625 AFUE: 92.0

Primary Fuel: LP

Windows U-Value: 0.33 ARGON LOW-E

Windows Glazing Area: 0.00

Gross Wall Area: 0.00

Approval Method: EXPRESS NH % Better Than Code: 0.00

Glazing Percentage: 0

Building Type:

Complete App Recv: 07/14/2006 Approval Date: 07/14/2006 Approved By:

Disapproval Date: Date Printed: 07/14/2006 On Hold?: ☐

Owner Email Sent: Contractor Email Sent:

Date Submitted on Web: Submitted By: On-line App Type:

Application Ref #:

Owner Contractor Building Approval Notes Browse File Attachments

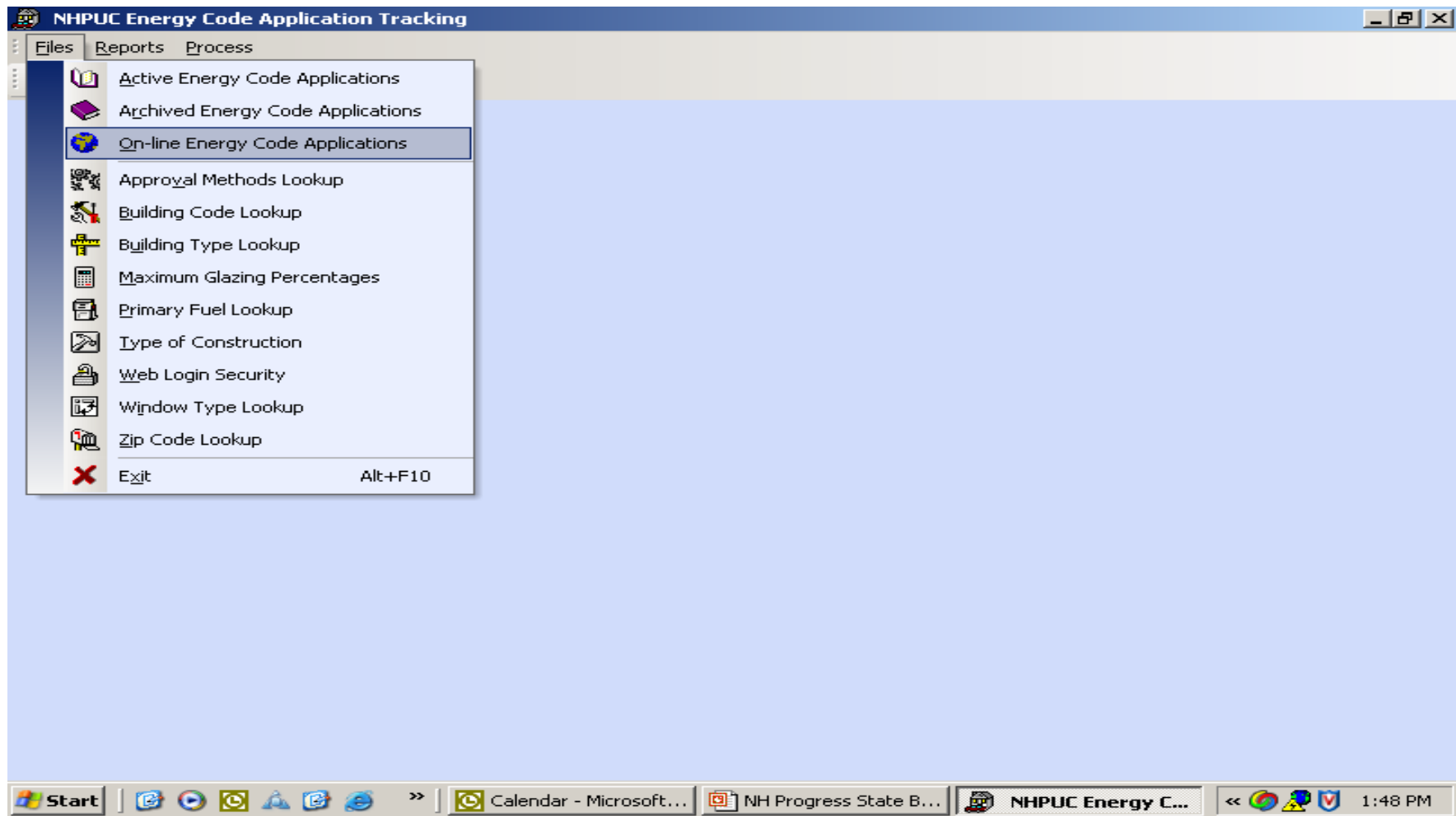
Sort = [Date Entered] DESC 1 of 7883

Add First Prev Next Last Edit Save Delete Cancel Refresh Find Filter Sort Approve Spell Print Email Export Exit

Start | Calendar - M... | NH Progress ... | New Hampsh... | 2 | 1:42 PM



Online Compliance User View



Online Compliance Owner Page

PUC View

View Online Energy Code Applications (Read Only Mode)

Company Name:

First Name:

Last Name:

Street Address:

City: State: Zip:

Telephone: Email:

Application Received?: ☐ Date Received:

Referred To:

In Process?: ☐

Owner Contractor Building Approval Notes Browse File Attachments

Sort = [Date Entered] DESC 3 of 3

Add First Prev Next Last Edit Save Delete Cancel Refresh Find Filter Sort Approve Spell Print Email Export Post Exit

Start | Calendar - M... | NH Progress ... | NHPUC Ene... | View Online... | 1:49 PM

Online Compliance Attachment Page

PUC View

View Online Energy Code Applications (Read Only Mode)

Owner Information:

PUC Number:

File Name	File Size	File Type/Ext	Date Submitted	View File
2841stflr.JPG	50817	image/jpeg		Click Button to View
284Front.JPG	55120	image/jpeg		
mullett20E-284.acx	20560	text/plain		
Mullett20E-284.RCK	38689	text/plain		

Insert Edit Cancel Save Attach View Delete

Owner Contractor Building Approval Notes Browse File Attachments

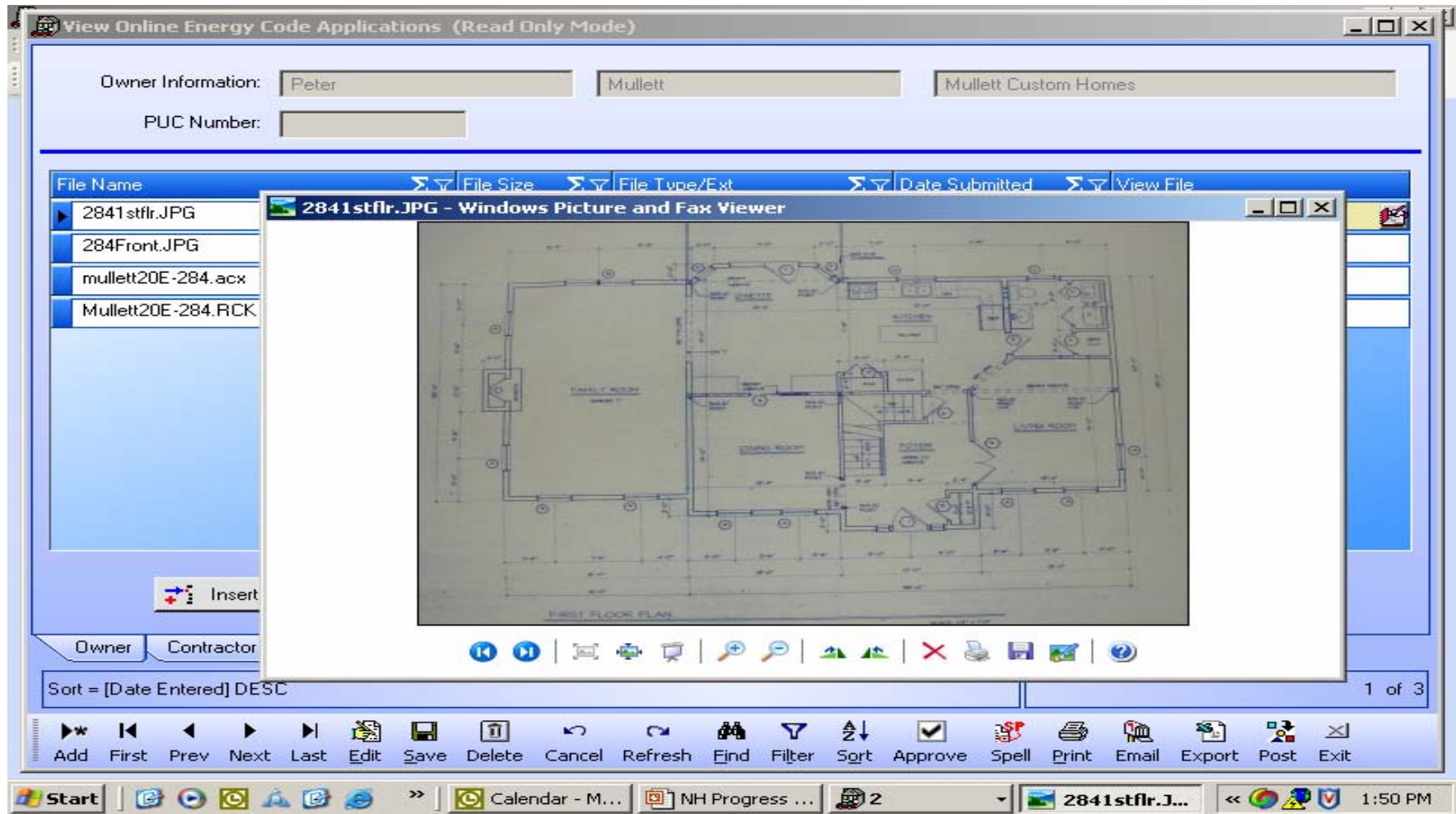
Sort = [Date Entered] DESC 1 of 3

Add First Prev Next Last Edit Save Delete Cancel Refresh Find Filter Sort Approve Spell Print Email Export Post Exit

Start | Calendar - M... NH Progress ... NHPUC Ene... View Online... 1:50 PM

Online Compliance Attachment Page

PUC View Building Plans



Online Compliance Town Zip Code/Town e-mail address page PUC View

NHPUC Energy Code Application Tracking

View Building Codes (Edit Mode)

Building Codes

Drag and drop a column to group by that column.

City Name	Zip Code	Building Code	Email Address
West Stewartstown	03597	9338	
West Swanzey	03469	9219	
Westmoreland	03467	9222	
Whitefield	03598	9343	
Wilmot	03287	9627	
Wilton	03086	9530	tow@tellink.net
Winchester	03470	9223	
Windham	03087	9737	admin@windhamnh.org
Windsor	03244	9531	
Winnisquam	03289	9003	
Wolfboro Falls	03896	9119	
Wolfeboro	03894	9119	wolfbldgoff@metrocast.net
Wonalancet	03897	9116	
Woodstock	03293	9440	admin@woodstocknh.org
Woodsville	03785	9418	

Sort = [City Name] 341 of 348

First Prev Next Last Add Edit Save Delete Cancel Refresh Find Filter Sort Print Export Exit

Sort = [Approval Method] 1 of 44

Start | Calendar - Microsoft... | NH Progress State B... | 1:54 PM

AreaCalc

mullett20E-284.acx - AreaCalc 2.2 Release 1c

File Edit Tools Help

Windows Skylights Doors Ceilings Walls Basements Floors Crawl Walls

Click a window name to add it to the window list on the right.

Window Library
Add New...

	Add to Library	Window Name	Assembly Type	Quantity	Width	x	Height	=	Unit Area	Total Area		U-Factor	SHGC	Cc
1	←			16	2'-10"		5'-9"		16.29	260.64	ft2			
2	←			2	5'-7"		5'-9"		32.10	64.20	ft2			
3	←			2	2'-0"		5'-9"		11.50	23.00	ft2			
4	←			2	2'-10"		3'-5"		9.68	19.36	ft2			
5	←			1	6'-0"		3'-5"		20.50	20.50	ft2			
6	←			1	5'-6"		6'-6"		35.75	35.75	ft2			
7	←			1	4'-11"		3'-11"		19.26	19.26	ft2			
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														

Window/Wall Percent 16 % Window Average U-Factor 0.00 Window Area Total 442.71 ft2

Enter a Window directly into the grid or click in the Library Name column to select a Window.

Start | [Icons] | Calenda... | NH Prog... | 2 | America ... | 2 Area... | 1:56 PM



ResCheck

Mullett20E-284.RCK - REScheck 3.7 Release 1b Code: New Hampshire Energy Code

File Edit View Options Code Tools Help

Project Envelope Mechanical

Ceiling Skylight Wall Window Door Basement Floor Crawl Wall

	Component	Assembly	Gross Area		Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	UA	Comments/Description (Optional)
	Building								
1	Ceiling 1	Flat Ceiling or Scissor Truss	1500	ft2	30.0	0.0	0.035	53	
2	Wall 1	Wood Frame, 16" o.c.	144	ft2	19.0	0.0	0.06	7	
3	Window 8	Vinyl Frame:Double Pane	16	ft2			0.31	5	
4	Window 8 cop	Vinyl Frame:Double Pane	16	ft2			0.31	5	
5	Wall 2	Wood Frame, 16" o.c.	18	ft2	19.0	0.0	0.06	1	
6	Wall 3	Wood Frame, 16" o.c.	117	ft2	19.0	0.0	0.06	5	
7	Window 10	Vinyl Frame:Double Pane	16	ft2			0.31	5	
8	Window 10 co	Vinyl Frame:Double Pane	16	ft2			0.31	5	
9	Wall 4	Wood Frame, 16" o.c.	18	ft2	19.0	0.0	0.06	1	
10	Wall 5	Wood Frame, 16" o.c.	108	ft2	19.0	0.0	0.06	4	
11	Door 1	Solid	44	ft2			0.5	22	
12	Wall 6	Wood Frame, 16" o.c.	36	ft2	19.0	0.0	0.06	2	
13	Wall 7	Wood Frame, 16" o.c.	117	ft2	19.0	0.0	0.06	5	
14	Window 12	Vinyl Frame:Double Pane	16	ft2			0.31	5	
15	Window 12 co	Vinyl Frame:Double Pane	16	ft2			0.31	5	
16	Wall 8	Wood Frame, 16" o.c.	234	ft2	19.0	0.0	0.06	13	
17	Window 14	Vinyl Frame:Double Pane	16	ft2			0.31	5	
18	Wall 9	Wood Frame, 16" o.c.	486	ft2	19.0	0.0	0.06	22	

Compliance Passes Max. UA 547 Your UA 415 24.1 % Better Than Code

Start | Calenda... | NH Prog... | 2 | America ... | Mullett... | 1:58 PM



PUC e-mail approval page

View Online Energy Code Applications (Read Only Mode)

Company Name: Mullett Custom Homes
First Name: Peter
Last Name: Mullett
Street Address: [Redacted]
City: [Redacted]
Telephone: [Redacted]

Application Received?: []
Referred To: [Redacted]
In Process?: []

Email Confirmation Setup

Select Email Type:
☒ Contractor Email Address
☐ Home Owner Email Address

Building City: Windham
City Email Address: [Redacted] [Edit](#)

☐ Send Email Confirmation to City?

[Send](#) [Review](#) [Cancel](#)

Owner Contractor Building Approval Notes Browse File Attachments

Sort = [Date Entered] DESC 1 of 3

Add First Prev Next Last Edit Save Delete Cancel Refresh Find Filter Sort Approve Spell Print Email Export Post Exit

Start | [Icons] | Calenda... NH Prog... America ... Mullett2... 4 2:01 PM

New Hampshire's Energy Efficiency Programs



New Hampshire's CORE Programs

The Cheapest kWh Is The One You Don't Need...

NH Energy Star Home Completions

- 2001 12
- 2002-2003: 112
- 2004: 341
- 2005: 630
- 2006: 719 (Plan)



3 Questions...and Some Answers

- Who Are The Players?
- What Are They Doing?
- Why Are They Doing It?

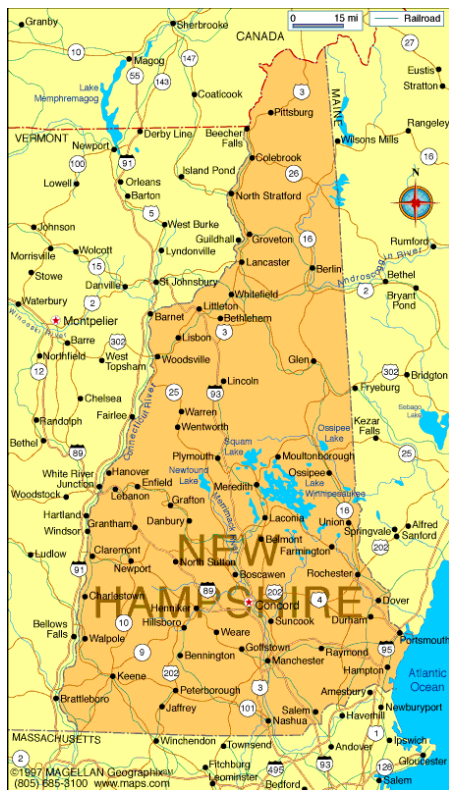


Who Are The Players?

- Legislature
- NH Public Utilities Commission
- NHEC, NGRID, Unitil, Keyspan, Northern
- State Agencies
 - Office of Energy & Planning
 - Office of Consumer Advocate
 - Department of Environmental Services
 - NH Community Technical Colleges
- Community Action Agencies
- NH Legal Assistance / Save Our Homes Org.
- Conservation Law Foundation
- Environmental Groups



What Are The “CORE” Programs?



- **Portfolio of programs to improve efficiency**
 - 4 designed for residential customers
 - Low income weatherization
 - 3 targeting business
- **Statewide – all NH customers have access**
- **Administered by local electric utility**
- **Funded through System Benefits Charge**
 - Energy Efficiency: \$0.0018 per kWh (\$20.6 M)
 - Low Income: \$0.0012 per kWh (\$13.7 M)



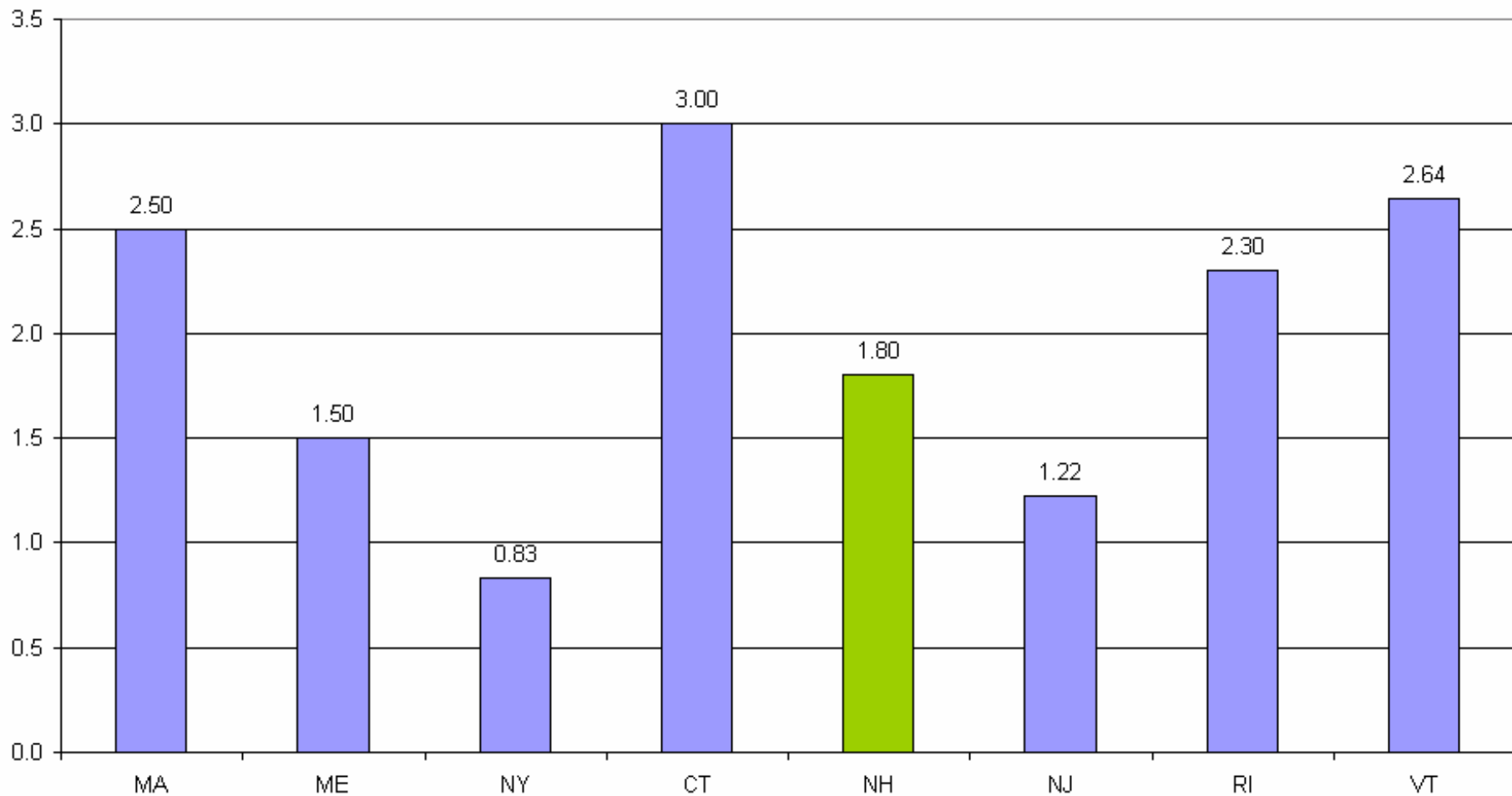
EE Funding by NE States

Energy Efficiency Funding

Annual Funding as of December 2005 (per ACEEE)

(mill rate per kWh, 1.8 = \$0.0018/kWh)

Regional Average = 1.97 mills/kWh



What are we doing in New Hampshire

- EXISTING HOMES - Weatherization
 - Home Energy Assistance (Low Income)
 - Home Energy Solutions (Electric Heat/High Use)
 - Residential Weatherization Network
 - www.repa-nh.org
- NEW HOMES - New Construction Efforts
 - ENERGY STAR Homes Program
 - Energy Code Training
 - “Code Consultant” efforts



What are we doing in New Hampshire

- EXISTING HOMES - Weatherization
 - Home Energy Assistance (Low Income)
 - Home Energy Solutions (Electric Heat/High Use)
 - Residential Weatherization Network
 - www.repa-nh.org



Residential Weatherization: HES/HEA



- Improve existing housing stock for electric heat and low-income customers
- Typical Efficiency Measures
 - Insulation
 - Air Sealing
 - Programmable Thermostats
 - Exhaust Fans, Timers
 - Refrigerators, Freezers
 - CFL Lights & Fixtures
 - Pipe & Tank Wraps
 - Low Flow aerators



REPA

NH - Residential Energy Performance Association

Last Update - January 23, 2006

~ NEW ~

Consumer's Guide to HOME ENERGY EFFICIENCY SERVICES and PROGRAMS

New listings being added as they are received from REPA Members.

This Guide will help you find information on Who To Call for:

- Home Energy Audits (existing Homes)
- EPA - Energy Star Homes Certifications (New Home Construction)
- New Home Construction Energy and Environmental Consulting Services
- New Hampshire State Residential Energy Code Report Services
- Energy Efficient Mortgage (EEM) Reports (HUD/FHA, VA, Fannie Mae, Freddie Mac)
- Home Energy Efficiency Product, Sales, Installations, and Service Providers
- New Hampshire Utility Funded Efficiency Programs
- New Hampshire Low Income Weatherization Programs

Click the **CONSUMER GUIDE** tab above or:

<http://www.repa-nh.org/page2.html>

Home

CONSUMER GUIDE

MEMBER PROFILES

Member Directory

Mission Statement

Board of Directors

Monthly Training Dates

Contact REPA

Membership Application

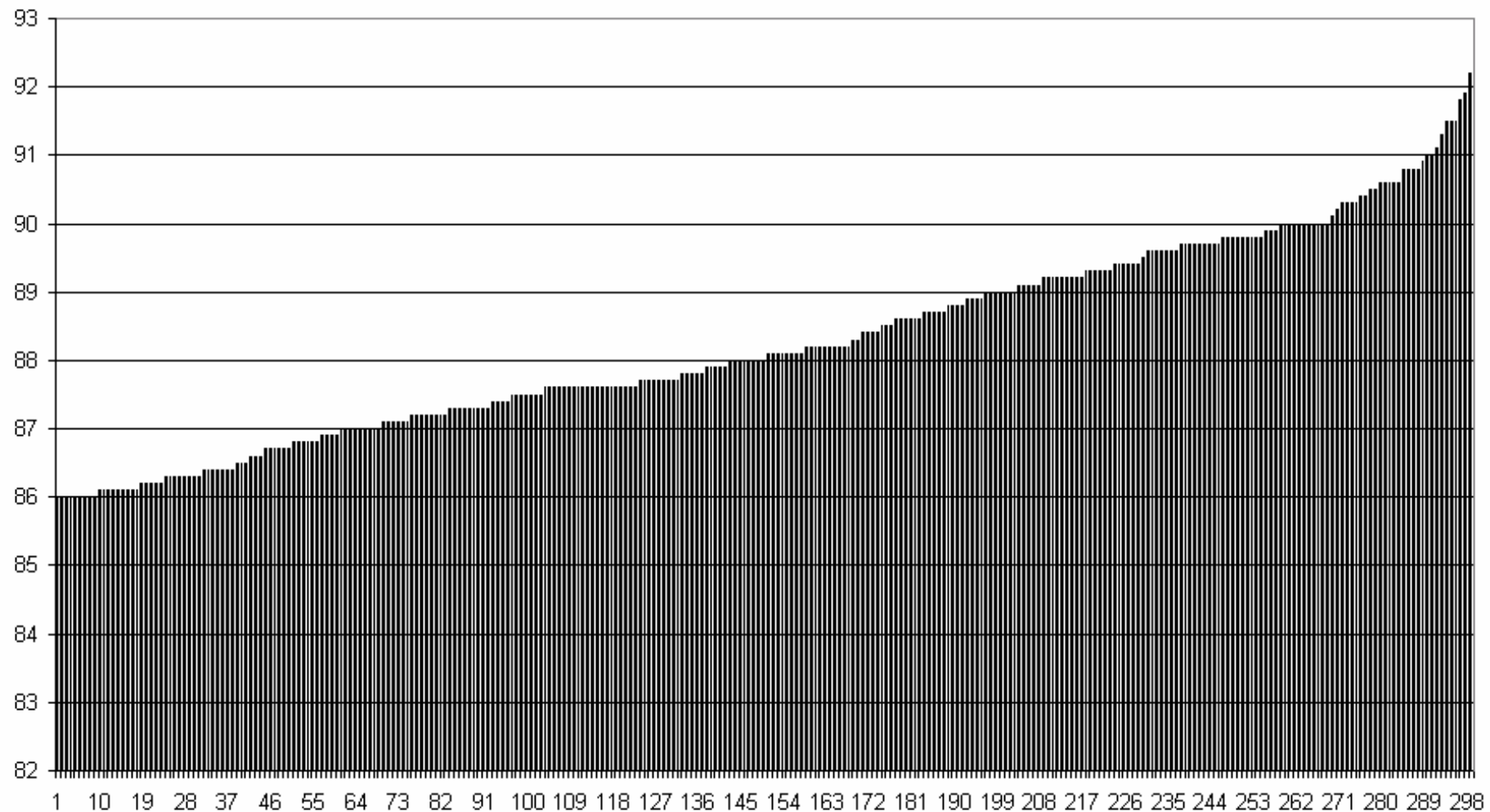
Links



ENERGY STAR Homes Program

2005 ENERGY STAR Homes Program

HERS Ratings (Average = 88.3)
(multi-family apartment complexes counted as 1)



ENERGY STAR Homes Program



Derryfield Village, 628 Hanover Street, 28 units for elderly housing
Home Energy Rating (HERS) = 91.0



Energy Code Training

- 15 sessions held around the state
- Residential Workshops
 - Four hour sessions on topics such as
 - Building Envelope – air sealing and insulating for high performance
 - HVAC Systems – high efficiency units, and importance of well installed delivery systems
 - Buildings Overview (summary of changes)
- Business Workshops
 - Four hour sessions on topics such as
 - Buildings Overview (summary of changes)
 - Using Emerging Technologies (to exceed code)



Code Consultant Efforts

- Contracted with 3 HERS Raters to mentor builders and work with interested code officials
- Residential Focus only
- Funded partially by DOE Grant and System Benefits Charge
- Some results over 2 years
 - Code officials have very little time/interest in participating so far
 - Approximately 70% of builders expressed interest.
 - Approximately 20% of builders have talked with consultants and are trying different techniques to make their home more energy efficient.
 - Approximately 10% of builders participated in the ENERGY STAR Homes Program



Impact of The CORE Programs



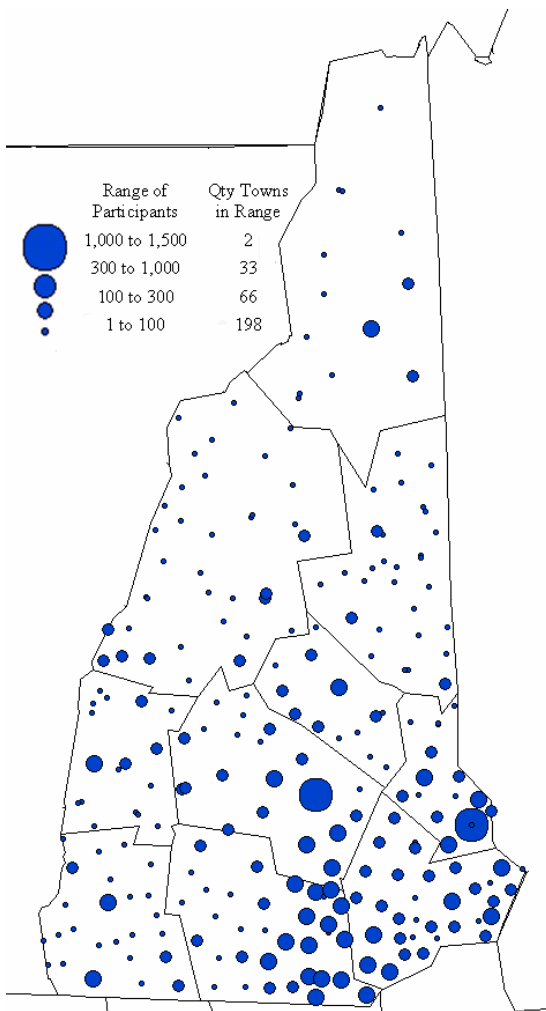
Overview of 2005 Results



*193,000 customers served since
program inception (June 2002)*

Customers Served

Goal	Outcome	Percent of Goal
52,858 customers	81,581 customers	155%



- Outcome
 - Core Programs 81,507
 - Utility Specific Programs 74
 - Grand Total 81,581 customers
- Reached customers in every city & town served by the NH utilities
- > 15% of NH households received services
- 80,183 residential customers & 1,398 businesses
- Many others received educational benefits
 - seminars, school programs, lighting catalog



Wise Investment: A Penny Saved...

Goal	Outcome	Percent of Goal
2.56/kWh saved	1.95¢/kWh saved	162%

- Each kWh saved cost just 1.95¢, as compared to the average retail price of 12.3¢ - a great value for consumers
 - Commercial/Industrial Customers: 1.2¢
 - Residential Customers: 3.3¢



2.2 million tons of emissions reduction since program inception, 457,000 cars (June 2002)

Environmental Impact – Emissions Reduction

Goal	Outcome	Percent of Goal
460,782 tons	603,754 tons	131%

- Outcome

● Core Programs	574,332
● Utility Specific Programs	<u>29,422</u>
● Grand Total	603,754 tons

- Emissions Reduction

- SO_x- 1,012 tons; NO_x- 373 tons; CO₂- 602,369 tons

- Equivalent to the annual emissions of more than 127,000 cars



In Summary – NH Energy Efficiency Programs Have...



Saved **3.3 billion lifetime kWh** – enough energy to power Concord for 8.7 years



Served over **192,000 customers** – more than 35% of NH electric customers



Saved customers **\$376 million** – with a 6+ fold return on investment



Reduced emissions by **2.2 million tons** – like taking 357,000 cars off the road for a year



How Does New Hampshire Compare?

- NH is one of at least 24 states offering energy efficiency programs
- ACEEE designated our low-income Home Energy Assistance program “exemplary” – one of the best in the nation.
- Energy Star Homes Outstanding Achievement Award for 2005 performance
- NH has highest recognition of “Energy Star”
- NH leads nation in Energy Star appliance sales
- Results achieved very cost-effectively: 1.95 ¢/kWh



Contact Information

- Website www.puc.nh.gov -> Click on energy codes
- e-mail wes.golomb@puc.nh.gov
or
- energycodes@puc.nh.gov
- Phone (603) 271-6306



Questions?

